GSW WATER HEATING
599 Hill Street West
Fergus, ON, Canada N1M 2X1

"SUPERFLUE" POWER VENTED GAS FIRED WATER HEATER

INSTALLATION AND OPERATING INSTRUCTIONS

Read these instructions thoroughly before starting

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PLEASE RETAIN THESE INSTRUCTIONS IN A SAFE LOCATION FOR FUTURE REFERENCE

⚠ WARNING:

Improper installation, adjustment, alteration, service, or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information, consult a qualified installer, service agency, or the gas utility.

⚠ FOR YOUR SAFETY

- **Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.**
- **Installation and service must be performed by a qualified installer, service agency or the gas utility.**

⚠ WARNING:

If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

WHAT TO DO IF YOU SMELL GAS?

- **Do not try to light any appliance.**
- **Do not touch any electrical switch; do not use any phone in your building.**
- **Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire department.**

DESIGN CERTIFIED ™

CERTIFIED ™

GSW Water Heating is a division of GSW Water Products Inc.

PART NO. 63817 REV. H (04-10)

REPLACEMENT PARTS LISTING

1. TERMINATION ELBOW
2. PIPE LENGTH (5') (OPTIONAL)
3. PIPE COUPLING (OPTIONAL)
4. PIPE ELBOW 90° (OPTIONAL)
5. RUBBER COUPLING
6. AIR TUBING
7. AIR SWITCH
8. JUNCTION BOX
9. JUNCTION BOX COVER
10. POWER CORD
11. BLOWER
12. BLOWER SUPPORT BRACKET
13. DRAFT DIVERTER
14. LIMIT SWITCH
15. ANODE (UNDER CAP)
16. NIPPLE
17. DIPTUBE
18. T & P VALVE
19. DRIPTUBE
20. BAFFLE ASSEMBLY
21. CONTROL VALVE
22. CONTROL VALVE COVER
23. INNER GAS DOOR
24. OUTER GAS DOOR
25. DRAIN VALVE
26. BURNER ASSEMBLY
27. IGNITER
28. SENSOR
29. HEATING SYSTEM SUPPLY*
30. HEATING SYSTEM RETURN*

* Available on 5065 models only.

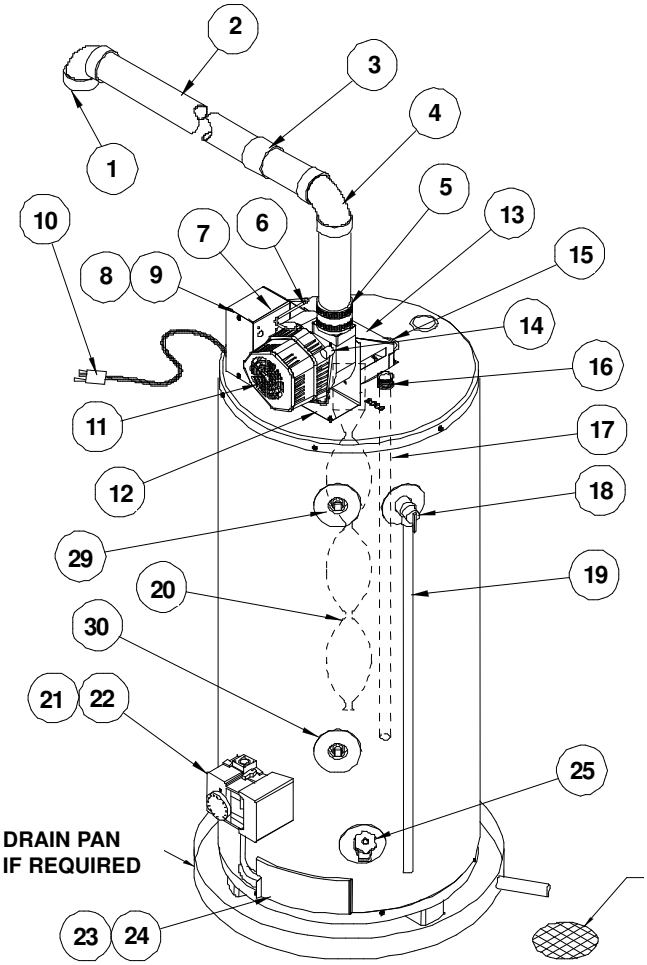
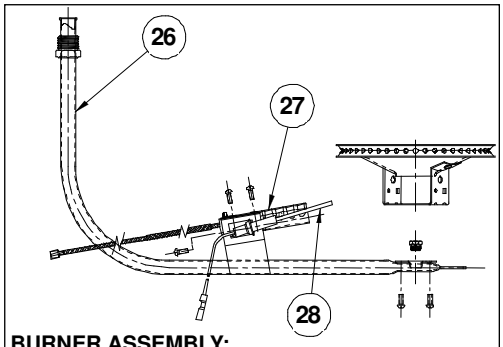
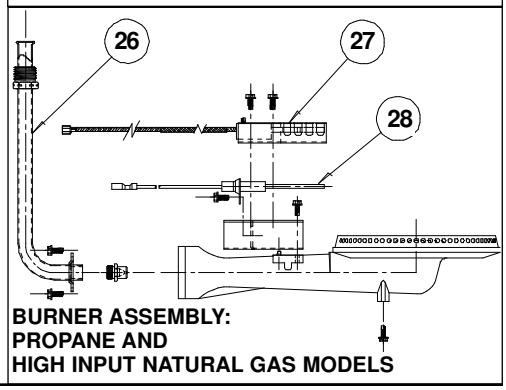


Figure 1



**BURNER ASSEMBLY:
NATURAL GAS MODELS**



**BURNER ASSEMBLY:
PROPANE AND
HIGH INPUT NATURAL GAS MODELS**

INSTALLATION RECORD

This water heater is protected by a multi-year warranty against leaks plus a one (1) year warranty on parts. Record key data here for future reference and prompt service:

Installed By / Purchased From: | Installation Date:

Location of Gas Shutoff Valve:

Catalogue Number	Model Number	Serial Number

B.T.U.	Fuel Type	P.S.I.	U.S. Gal.

IF YOU HAVE ANY INSTALLATION, PERFORMANCE OR OPERATIONAL QUESTIONS PLEASE CALL THE FOLLOWING NUMBER, PRIOR TO REMOVING THE WATER HEATER
(if this is a rental water heater please contact the rental company)

1-888-GSW-TECH

1-888-479-8324

FOR ASSISTANCE OR ADDITIONAL INFORMATION, CONSULT A QUALIFIED INSTALLER, SERVICE AGENCY, OR THE UTILITY.

I) DESCRIPTION

The “Superflue” series of water heaters can be installed to vent the products of combustion horizontally through the wall or vertically through the roof. A blower is used to expel the products of combustion by means of plastic piping to the outdoors without the need for a conventional chimney.

Before installing this heater, consideration must be given to these installation details:

1. The best location for the outdoor vent terminal.
2. Where and how to route the vent pipes.
3. This heater may create blower / air noise. Do not locate near sleeping quarters.
4. Where and how to obtain combustion, ventilation, and dilution air.
5. Where the cold water supply is, and how to feed hot water into the system.
6. Where the gas supply is located.
7. Where the electric receptacle is located.

These issues are interrelated and will help determine the best location. It is suggested that each parameter be looked at individually without losing sight of the other parameters.

These instructions have been written for the proper installation and safe operation of this heater.

APPROVALS – WATER HEATING, COMBO HEATING

This heater has been approved by the Canadian Standards Association as a water heater to provide domestic hot water, and with the addition of a suitable fan coil and / or baseboard radiators for combination water heating and space heating application.

Where a water heater is intended to supply both domestic hot water and space heating, a proper heat survey (heat loss) calculation must be done to determine if the heater will supply sufficient energy to handle the anticipated load. See Section VIII) – Combo Heating.

⚠ WARNING

This heater must be installed in accordance with these instructions and local building codes. It must be installed with a proper temperature and pressure relief valve, which may release water in normal operation. Temperature and pressure relief valves installed, must be certified as meeting the requirements for the Standard for Temperature, Pressure, Temperature and Pressure Relief and Vaccum Relief CSA 4•4, in Canada. When in the United States the Requirements for Relief Valves and Automatic Gas Shut-Off Devices for Hot Water Supply Systems, ANSI Z21•22, is required. These valves must be installed in the opening marked for this purpose, at the time of installation of the water heater.

It is possible that connections to the water heater, or the water heater itself, may develop leaks. It is therefore imperative that the water heater be installed so that any water is directed to an adequate drain in such a way that it cannot damage the building, furniture, carpeting or other property subject to water damage. GSW cannot be held responsible for damage caused by water from the water heater, pressure relief valve or related fittings where adequate provision to drain such water has not been made. Closets without drains and carpeted areas are examples of unsuitable locations for any water heater.

If such a location cannot be avoided, or when the heater is installed on a mezzanine or multi–level building where water leakage may damage lower floors, a suitable drain pan must be installed. This drain pan must be at least 1 - 1/2” deep and be provided with a pipe that directs overflow water to a suitable drain. This drain pan must not restrict combustion air flow.

⚠ CAUTION

If it is inevitable that this heater has to be installed directly on carpeting, the carpeting must be protected by a metal or wood panel beneath the appliance, extending beyond the full width and depth of the appliance by at least 3 inches in any direction, or if the appliance is installed in a closet or alcove, the entire floor must be covered by the panel. This panel must be strong enough to carry the weight of the heater full of water. Failure to heed this warning may result in a fire hazard.

The installation must conform to one or more of the following as applicable:

CANADIAN INSTALLATIONS

1. The latest edition of CSA B149.1 Natural Gas and Propane Installation Code
2. Public Utility and/or Local Codes

U.S. INSTALLATIONS

1. The latest edition of the National Fuel Gas Code ANSI Z 223.1
2. Public Utility and/or Local Codes

The venting system of this unit must be used and installed strictly in accordance with the instructions contained in the “Venting” section of this manual.

⚠ SAFETY WARNING

Water heaters are heat producing appliances. To avoid damage or injury, there shall be no materials stored against the water heater and proper care shall be taken to avoid unnecessary contact (especially by children) with the water heater.

⚠ FOR YOUR SAFETY

Do not store or use gasoline or other flammable, combustible, or corrosive vapours and liquids in the vicinity of this or any other appliance.

INSTALLATION CLEARANCES

The minimum clearances between the heater and combustible material are:

Sides and Rear	1”
Flue Pipe	0”
Jacket Top to Ceiling	8” *
Flue Pipe Through Wall	0”

* For 40 and 50 gallon models, it is recommended that a 36” clearance from jacket top to ceiling be maintained in order to have sufficient room for anode replacement should this become necessary. For 60 gallon models, a 42” clearance is recommended.

This water heater is certified for installation on a combustible floor.

A minimum clearance of 24" in front should be provided for inspection and servicing.
This heater is approved for alcove and closet type installation, but maintain the minimum clearances to combustible material listed above.

II) VENTING

COMBUSTION AIR SUPPLY

An adequate air supply shall be provided for combustion and ventilation. An insufficient supply of air will cause recirculation of combustion products resulting in air contamination that may be hazardous to life.

When an exhaust fan is installed in the same room with this water heater, sufficient openings for air must be provided. Undersized openings will cause air to be drawn into the room through the exhaust vent.

⚠ WARNING

THE FLOW OF COMBUSTION AND VENTILATION AIR MUST NOT BE OBSTRUCTED.

Unconfined Spaces

In unconfined spaces in buildings of other than unusually tight construction, infiltration may be adequate to provide air for combustion, ventilation and dilution of flue gases. Unconfined space is defined as a space whose volume is not less than 50 cubic feet per 1,000 BTU/hour of the combined input rating of all appliances installed in that space. Rooms directly adjoining the space in which the appliances are installed, through openings and not furnished with doors, are considered part of the unconfined space.

Confined Spaces

(Less than 50 cubic feet per 1,000 BTU/hour)

(a) Air from Inside the Building.
See Table I and Figure 2.

Dim.	CSA B149.1	U.S. ANSI Z223.1
A	1 in^2 per 1000 BTU/Hr	1 in^2 per 1000 BTU/Hr
D_L	6” Min., 18” Max	12” or less
D_U	Note 1	12” or less
H	3” min.	3” min.
W	per calculation from A	per calculation from A

Table I Confined Space

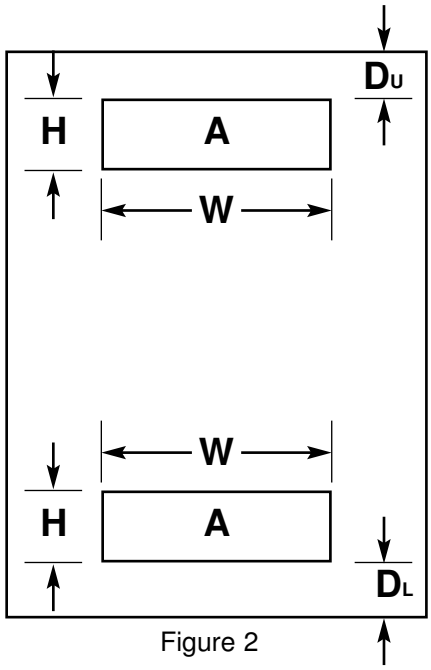


Figure 2

NOTE 1: The upper opening shall be located as near the ceiling as possible, but not lower than any relief opening of a draft hood or draft regulator. It shall have a free area not less than the total area of all vents or chimneys from the appliances within the room, except for closet type installations where the area shall not be less than that of the lower opening.

(b) Air from Outdoors

A confined space shall be provided with two permanent openings: one near the top, and one near the bottom of the enclosure. These openings can be open directly to the outdoors or by ducts to crawl spaces or attics which are open to the outdoors.

(i) Air Supplied from Outdoors, Table II, see Figure 2

	CSA B149.1	U.S. ANSI Z223.1
Free Area A	1 in^2 per 4000 BTU/Hr	1 in^2 per 4000 BTU/Hr
D_L	6" Min., 18" Max	12" min.
D_U	Note 1	12" min.
H	3" min.	3" min.
W	per calculation from A	per calculation from A

Table II

(ii) Air Supplied from Outdoors by Horizontal Ducts Table III, see Figure 2

	CSA B149.1	U.S. ANSI Z223.1
Free Area A	1 in^2 per 2000 BTU/Hr	1 in^2 per 2000 BTU/Hr
D_L	6" Min., 18" Max	12" min.
D_U	Note 1	12" min.
H	3" min.	3" min.
W	per calculation from A	per calculation from A

Table III

(iii) Air Supplied from Outdoors by Vertical Ducts, Table IV, see Figure 2

	CSA B149.1	U.S. ANSI Z223.1
Free Area A	1 in^2 per 4000 BTU/Hr	1 in^2 per 4000 BTU/Hr
D_L	6" Min., 18" Max	12" min.
D_U	Note 1	12" min.
H	3" min.	3" min.
W	per calculation from A	per calculation from A

Table IV

METHOD OF INSTALLATION

Venting Materials

Vent Pipe Material of Schedule 40 ABS, CPVC must be used in this installation.

All materials must be of the same type for one installation and must use the appropriate solvent cement and primer/cleaner.

Pipes and Fittings must conform to the following standards:

i) CSA standard and/or
ii) American National Standards Institute and the American Society for Testing and Materials (ANSI /ASTM) Standards.

VENTING CONNECTIONS

1) VENT TERMINATION

Outside Vent Terminal Location

In Canada, the vent terminal location must be in accordance with the latest edition of the CSA B149.1. Natural Gas and Propane Installation Code and Public Utility and/or Local Codes having jurisdiction.

In the U.S., the National Fuel Gas Code, ANSI Z 223.1 (latest edition) and local codes have specific requirements for the location of vent terminals on vertical walls.

The following is a condensed outline for prohibited locations of outside vent terminals:

In Canada:

The vent shall not terminate:

– within 6' of a mechanical air supply inlet of a building.
– above a meter regulator within 3' horizontally of the vertical centre line of the regulator.
– vent outlet to a maximum vertical distance of 15'.
– less than 1' above grade level or the highest snow accumulation level that can be expected. In areas where high snow accumulations occur, the vent terminal may have to be raised by a vertical riser.
– within 1' of a building opening or combination air inlet of another appliance.
– less than 7' above a driveway or sidewalk.

In the U.S.:

– the vent terminal shall terminate not less than 3' above any forced air inlet duct.
– the vent terminal shall terminate not less than 4' below, 4' horizontally, or 1' above any door, window or gravity air inlet into any building.
– the vent terminal shall be located not less than 1' above grade.
– the vent terminal shall not exit into a public walkway.
– in locations where high snow accumulations occur, or where the exit from the building is less than 1' above grade, a vent riser may have to be installed. See Figure 6 for recommended practices.

Vent Termination

1. Drill a hole through the exterior wall, slightly larger than the vent piping, to allow for final alignment of the vent piping to the heater.

2. Attach the termination elbow to a short length of vent pipe – approximately 2' minimum, 5' maximum. Ensure that the debris screen is against the pipe so that it cannot fall or be pulled out of the elbow.

3. Push this pipe through the wall from the outside until the joint with the elbow is within 1" – 2" of the outside face of the wall.

4. Point the elbow down and hold the pipe temporarily in position with a small wedge or a splinter of wood.

5. Proceed to construct vent pipe connections to the water heater.

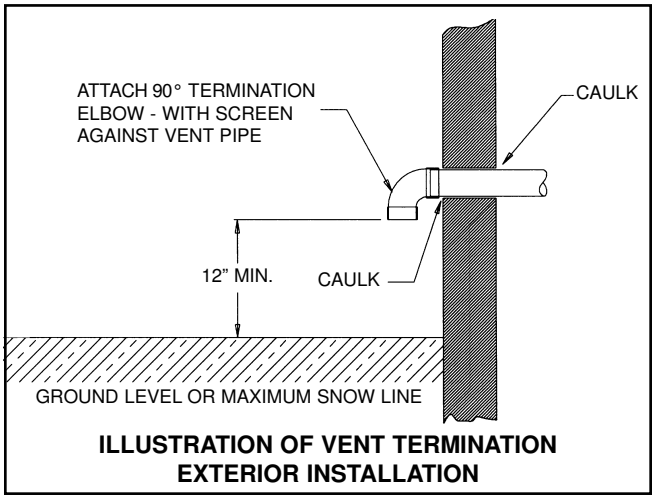


ILLUSTRATION OF VENT TERMINATION EXTERIOR INSTALLATION

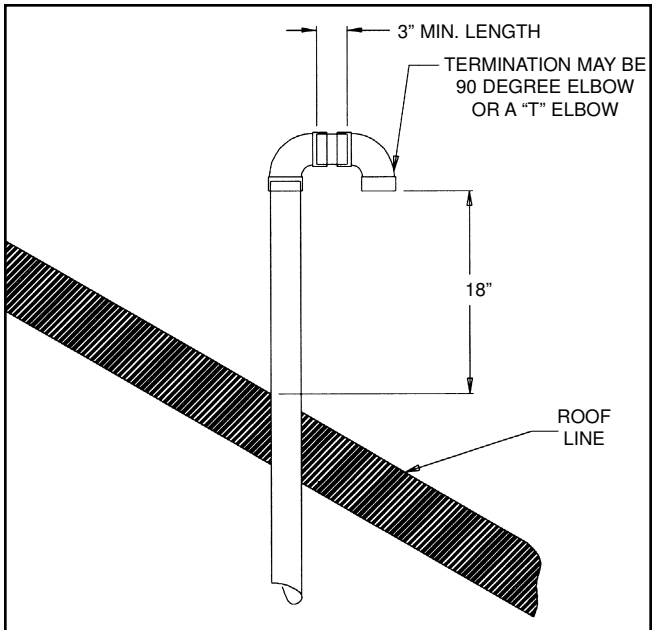
Figure 3 - 1

ALLOWABLE VENT LENGTHS AND MATERIALS (BOTH VERTICAL AND HORIZONTAL VENTING)

WATER HEATER MODEL	SUFFIX	VENT PIPE SIZE in. (mm)	PRESSURE SWITCH SETTING (in . W.C.)	VENT MATERIAL (SCHEDULE 40)	MAXIMUM EQUIVALENT VENT LENGTH	MINIMUM EQUIVALENT VENT LENGTH
G40 G50 G60	NVH, PVH	2" (50)	-0.15 in. wc	CPVC, ABS	50 FEET (15.2 METERS) +TERMINATION ELBOW	2 1/2 FEET (0.76 METER) + ONE 90° ELBOW +TERMINATION ELBOW
	NVH, PVH	3" (75)	- 0.15 in. wc	CPVC, ABS	80 FEET (24.4 METERS) +TERMINATION ELBOW	50 FEET (15.2 METERS) +TERMINATION ELBOW
G5065	SNV, SPV	3" (75)	- 0.55 in. wc	CPVC, PVC, ABS	50 FEET (15.2 METERS) +TERMINATION ELBOW	3 FEET (0.91 METERS) + ONE 90° ELBOW +TERMINATION ELBOW

1. EACH 2" (50mm) 90° ELBOW USES 5 EQUIVALENT FEET (1.5 METERS).
2. EACH 3" (75mm) 90° ELBOW USES 7 EQUIVALENT FEET (2.1 METERS).
3. ONE 2" (50mm) 45° LONG-RADIUS ELBOW IS EQUIVALENT TO 3' (.9 METERS) OF 2" (50mm) STRAIGHT PIPE.
4. ONE 3" (75mm) 45° LONG RADIUS ELBOW IS EQUIVALENT TO 4' (1.2 METERS) OF 3" (75mm) STRAIGHT PIPE.
5. MINIMUM DISTANCE BETWEEN ELBOWS IS 6" (150mm)
6. DO NOT MISMATCH VENTING MATERIALS.

Table VI



VERTICAL VENTING
(MUST BE SUPPORTED EVERY 8')

A vent used in a SPECIAL VENTING SYSTEM with positive vent pressure and passing through a roof shall extend at least 18 inches (450 mm) above the highest point where it passes through the roof surface and any other obstruction within a horizontal distance of 18 inches (450 mm)

Figure 3 - 2

2) VENT CONNECTIONS TO THE WATER HEATER

IMPORTANT GUIDELINES

These venting guidelines are good, recommended practice for venting installations. Applicable local codes supersede this set of venting guidelines. See Figure 4.

1. The length and number of the 90 degree elbows must be kept to a minimum.
2. No back-to-back 90 degree elbows should be used.
3. 45 degree elbow should be used where possible to minimize the number of 90 degree elbows in case re-direction of flue gas are required.
4. Do not use short radius elbows.
5. No female-male (Street nineties) should be used.
6. Pipe must be cut at a right angle.
7. Deburr cut pipe outside and inside so that solvent cement is not pushed away by sharp edges.
8. Dry fit all pipes and fittings before joining the parts with solvent cement.
9. Parts must fit well without putting stress on any sections.

⚠ CAUTION

Use of Solvent Cement and Primer:
Use only in well-ventilated areas. Do not use near flame or open fire. Solvent cements for plastic pipe are flammable liquids and must be kept away from all sources of ignition.

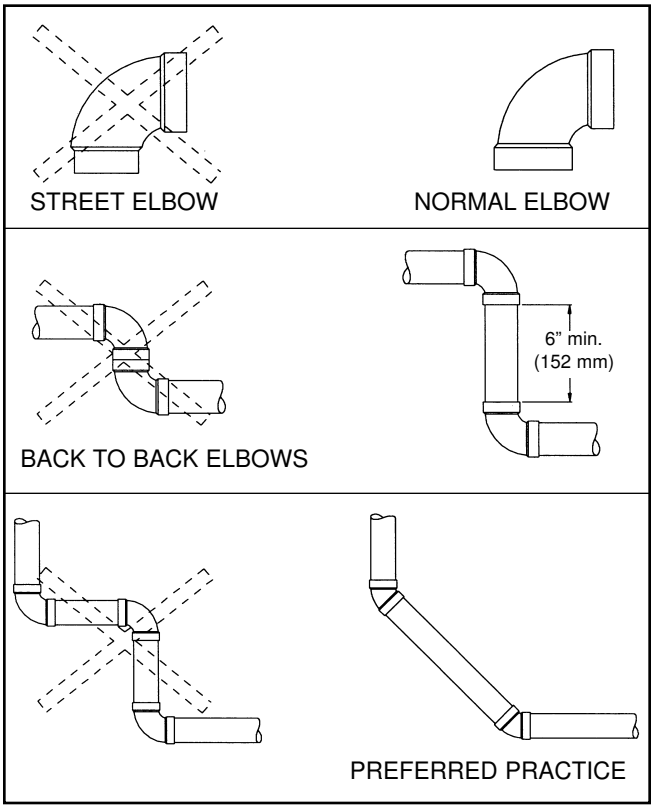


Figure 4

Refer to Table VI for maximum and minimum vent length. Construct vent pipes connecting to the water heater. Horizontal runs may slope in any direction as long as a water trap is not created in the venting system. The horizontal runs must not sag or form valleys where condensation might collect. To avoid this situation, provide support for the runs at a maximum 4 feet. All Power Vented water heaters generate a certain amount of operational noise. In order to minimize noise transmission to floor joists though hangers, place some soft material such as foam rubber, approximately 1/2" thick, between hangers and the vent pipes. Ensure that all vent components fit properly. Apply solvent cement and join all parts permanently.

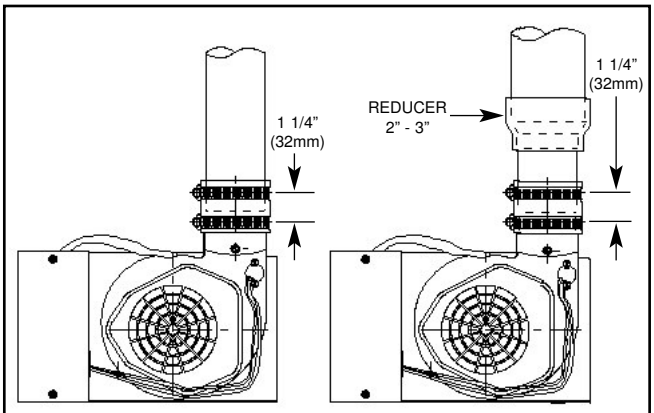
Apply solvent cement to join the termination assembly to the venting system inside the building. Seal around the vent terminal where it passes through the wall, inside and out with silicone sealant caulking. Proceed to attach the venting system to the rubber coupling of the water heater.

3) BLOWER RUBBER COUPLING CONNECTION (See figure 5)

1. Clean and slightly sand the end of the vent pipe that will connect to the rubber coupling. This will ensure a good mechanical connection between the coupling and the pipe.
2. At the rubber coupling, loosen the top gear clamp to allow the vent piping to be inserted fully 1–1/4" (32mm) deep. Do not use sealant or glue.
3. Tighten the top gear clamp to ensure that the vent pipe is firmly secured, and gas tight.
4. Check that the bottom gear clamp is firmly seated, secured, and gas tight.
5. As a final check, the vent pipe should be gently moved side to side and vertically. There should be no slippage or movement of the vent pipe within the coupling.

⚠ CAUTION

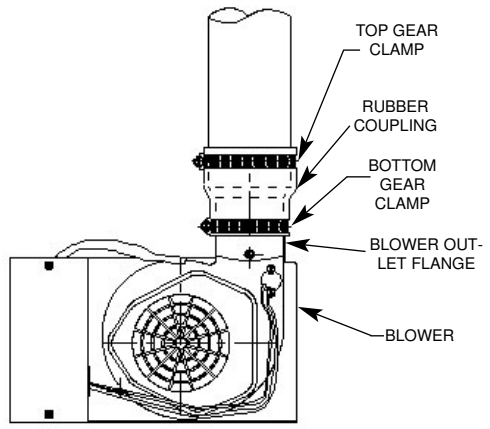
- **DO NOT OVERTIGHTEN THE TOP AND BOTTOM GEAR CLAMPS OF THE RUBBER COUPLING.**
- **DO NOT APPLY SOLVENT CEMENT OR SILICONE TO THE RUBBER COUPLING CONNECTION.**



BLOWER ASSY WITH RUBBER COUPLING: FOR 2" NOMINAL PIPE

BLOWER ASSY WITH RUBBER COUPLING: FOR 3" NOMINAL PIPE

MODELS DESIGNED FOR USE WITH 2" OR 3" PIPE



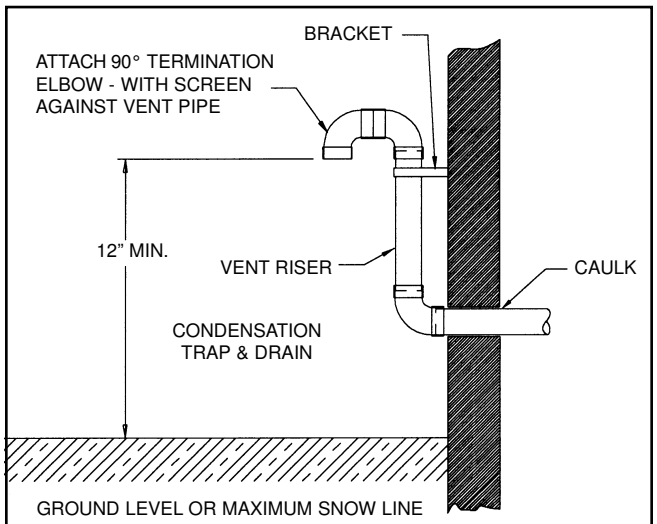
BLOWER ASSEMBLY WITH RUBBER COUPLING: FOR 3" NOMINAL PIPE

MODELS DESIGNED FOR USE WITH 3" PIPE ONLY

Figure 5

4) IF A VENT RISER IS REQUIRED

1. Fabricate the vent riser to lift the termination elbow to the height required.
2. Fasten the assembly to the outside wall with brackets. See Figure 6. Bracket is to be supplied by installer.
3. Extend the horizontal run of pipe a convenient distance through the wall to make further work easy.
4. Connect vent riser assembly to the rest of the venting system.



VENT PIPING MAY BE SLOPED IN ANY DIRECTION, AS LONG AS A WATER TRAP IS NOT CREATED IN THE VENTING SYSTEM. THE SLOPE SHOULD BE KEPT TO A MINIMUM SO AS NOT TO EXERT ANY UNDUE STRESS ON THE PIPE.

INSTALLATION OF FABRICATED VENT RISER

Figure 6

III) GAS PIPING

Install the gas piping as indicated in Figure 7. Use only new pipe and fittings, with sound, clean–cut pipe threads. Sealing compound must conform to the applicable code for pipe sealing compounds for use with natural gas and propane.

A manual gas shut–off valve must be installed ahead of a union of the ground– joint type to the gas valve. At the gas control, a sediment trap must be installed.

The maximum inlet gas pressure must not exceed 1/2 PSIG (14" W.C.). For input adjustment, the minimum inlet gas pressure is 1/28 PSIG (1" W.C.) above the manifold pressure shown on the water heater rating plate.

LEAK TESTING

The water heater and its gas line connections must be leak tested before putting the water heater in operation.

All leak testing must be done with a soapy water solution or equivalent leak test liquid. Never use a match or open flame to test for gas leaks. A fire or explosion could result.

The appliance and its individual shut–off valve must be disconnected from the gas supply piping system during any pressure test of that system at test pressures in excess of 1/2 PSIG (3.5 kPa).

The appliance must be isolated from the gas supply piping system by closing its individual manual shut–off valve during pressure testing of the gas supply piping system at test pressures equal to, or less than 1/2 PSIG (3.5 kPa).

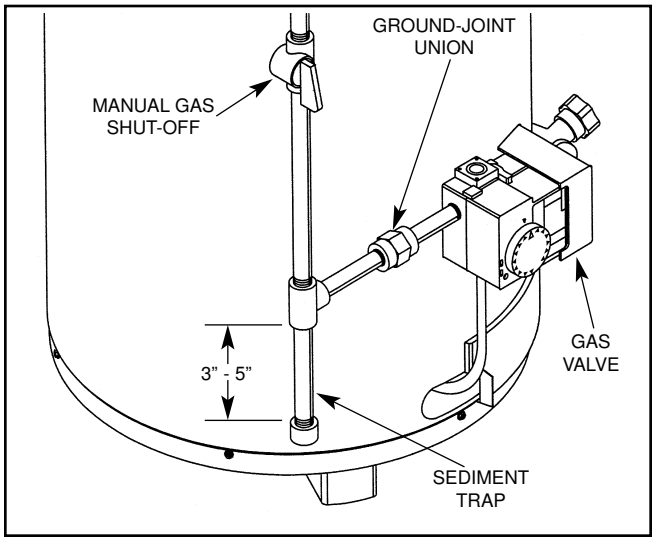


Figure 7

IV) WATER PIPING

General

Pipes and fittings must be installed as shown in Figure 8. Note that the dip tube is in the cold water fitting (right hand side) of the heater. Some heaters may have heat trap fittings installed in the HOT and COLD water connection of the heater. These appear generally like plugs in the fitting, the cold fitting being colored blue and the hot fitting, red or pink. Do not attempt to pry these "plugs" loose or damage them.

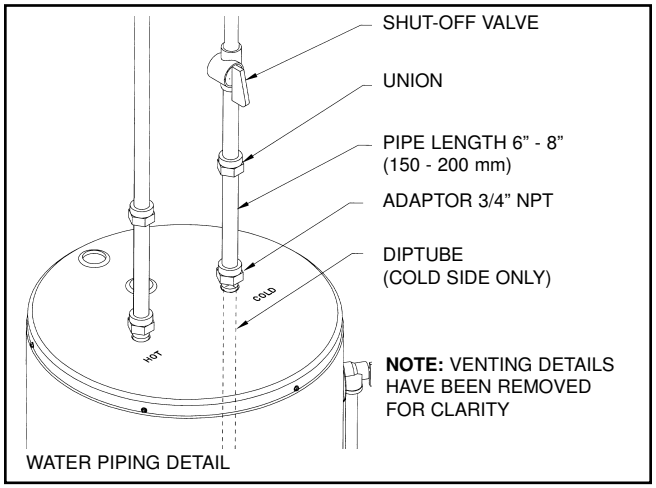


Figure 8

When attaching sweat fittings to the heater, do not apply heat to the nipples of the water heater because the nipples contain a plastic liner. Sweat the adaptor to a length of tubing – usually 6" – 8" long minimum, before fitting the adaptor to the water connections.

Hot and Cold Water Connections

It is good practice to install unions at the hot and cold water connection of the heater. The cold water connection must have a shut–off valve installed so that the heater can be isolated from the house supply for servicing.

⚠ CAUTION

Before filling the tank, ensure that a properly rated temperature and pressure relief valve is installed in the designated fitting.
See following T&P Valve section.

When the water connections have been completed, fill the tank with water.

To fill the tank, open an upstairs hot water faucet. Open the cold water valve in the cold water line to the heater. Make sure the drain valve of the heater is closed. When an uninterrupted stream of water without apparent air bubbles flows from the hot water faucet, the tank is filled. Close the hot water faucet.

Check for leaks, and repair as necessary.

Temperature and Pressure Relief Valve

Water heaters have the temperature and pressure relief valve factory–installed for protection against excessive temperature and/or pressure.

Any replacement valve must not exceed the temperature and pressure rating of the original valve, and must meet the latest edition of ANSI Z21.22 • CSA 4.4 the Standard for "Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems."

To prevent bodily injury, hazard to life or damage to property, the relief valve must be allowed to discharge water in the event of excessive temperature and/or pressure in quantity, should circumstances demand.

The discharge line from the temperature and pressure relief valve must:

1. not be smaller than the outlet pipe size of the valve.
2. not be threaded, capped nor plugged.
3. not be connected directly to a drain.
4. not contact any live electrical part.
5. be of a material able to withstand 210°F water without distortion.
6. be protected from freezing.
7. terminate not less than 6" nor more than 12" above a floor drain, or be piped external to the building.
8. terminate close to a drain of adequate capacity.

⚠ CAUTION

Do not install any valve between the water heater and the temperature and pressure relief valve.

⚠ WARNING

For protection against excessive temperatures and pressure, install temperature and pressure protective equipment required by local codes, but no less than a combination temperature and pressure relief valve certified as meeting the requirements for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems, ANSI Z21.22 • CSA 4.4, by a nationally recognized testing laboratory that maintains periodic inspection of production of listed equipment or materials. The temperature and pressure relief valve, either original or replacement, shall be marked with a maximum set pressure not to exceed the maximum working pressure of the water heater. The temperature and pressure relief valve shall also have an hourly rated temperature steam BTU discharge capacity not less than the hourly rating of the water heater.

Provide tubing so that any discharge from the temperature and pressure relief valve will exit within 6" above, or any distance below the structural floor and cannot contact any live electrical part. It is recommended that a minimum clearance of 4" be provided on the side of the water heater for servicing and maintenance of the temperature and pressure relief valve.

Failure to install and maintain a new, listed 3/4" temperature and pressure relief valve will release the manufacturer from any claim which might result from excessive temperatures and pressures.

If this water heater is installed in a closed water supply system, such as one having a back–flow preventer in the cold water supply, provisions must be made to control thermal expansion. Remember, water, when heated, will expand. Failure to provide means to control thermal expansion may cause the temperature & pressure relief valve on the heater to discharge water periodically. Your local water supplier or local plumbing inspector should be contacted on how to control this situation. NEVER PLUG OR REMOVE the temperature and pressure relief valve.

Never operate the water heater with the cold water supply valve closed, or without first checking to ensure that the heater is filled with water.

V) POWER SUPPLY

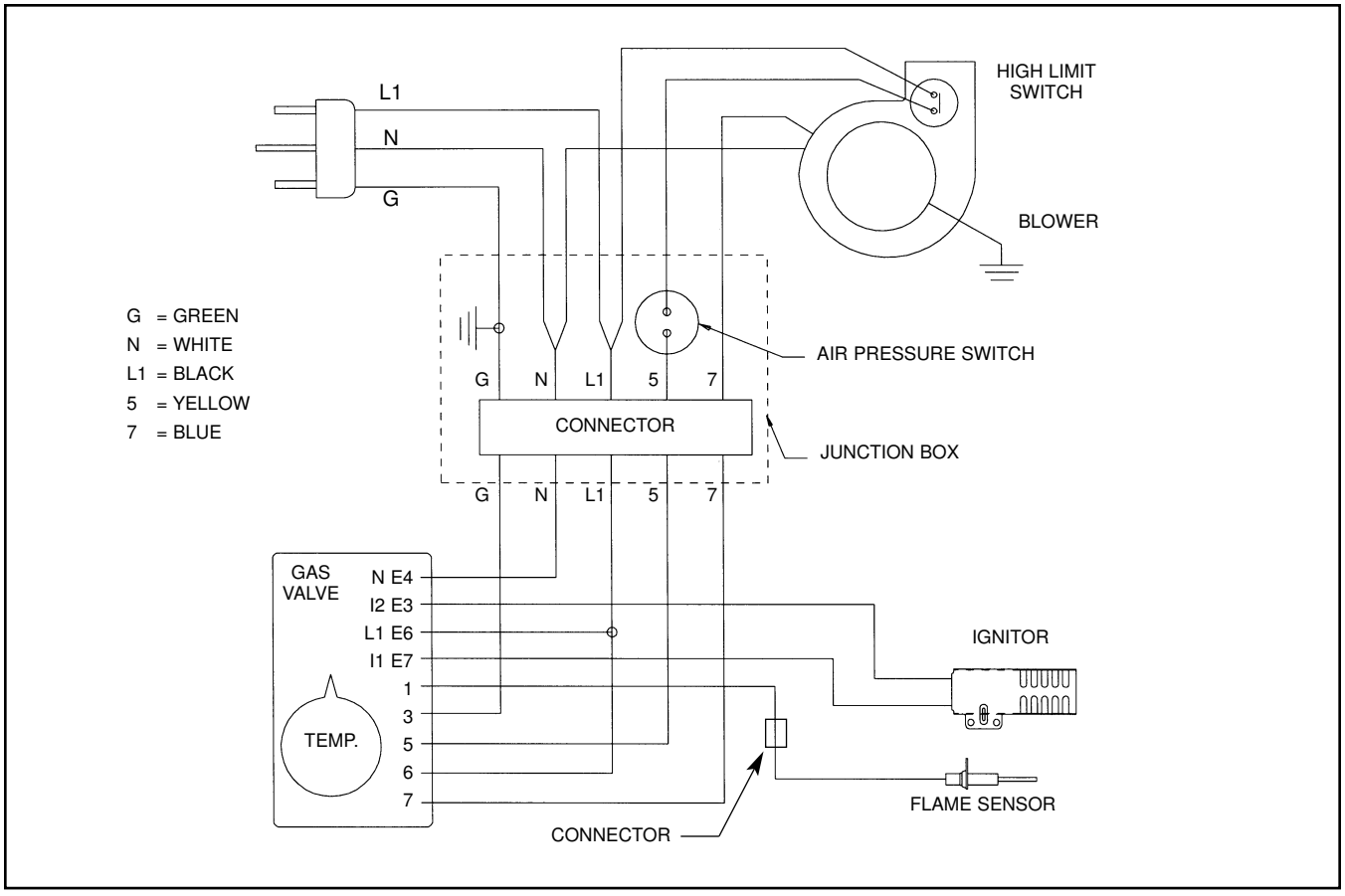
The power supply required for this heater is 120V, 60 Hz AC. A three–wire cord and plug is provided on the heater. This must be plugged into a 120V, electrically grounded, fused 15A receptacle. The electrical supply must be electrically grounded in accordance with local codes or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70 and/or CSA C22.1 Electrical Code. No switch should be provided in that line which might be accidentally turned off. Ensure that the power supply has a neutral ground connection. If necessary, provide a new outlet from the fuse panel to within 5' of the heater. Do not use an extension cord to reach a receptacle.

Caution: Label all wires prior to disconnecting when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing. This Gas Control is polarity sensitive.

If wiring has to be replaced, use only TYPE TEW 105°C wire, except ignitor wires. If there is a problem with ignitor wires, replace ignitor assembly in its entirety.

⚠ WARNING

When the unit is plugged in, 120VAC is present at the electric connections of the control.



WIRING DIAGRAM

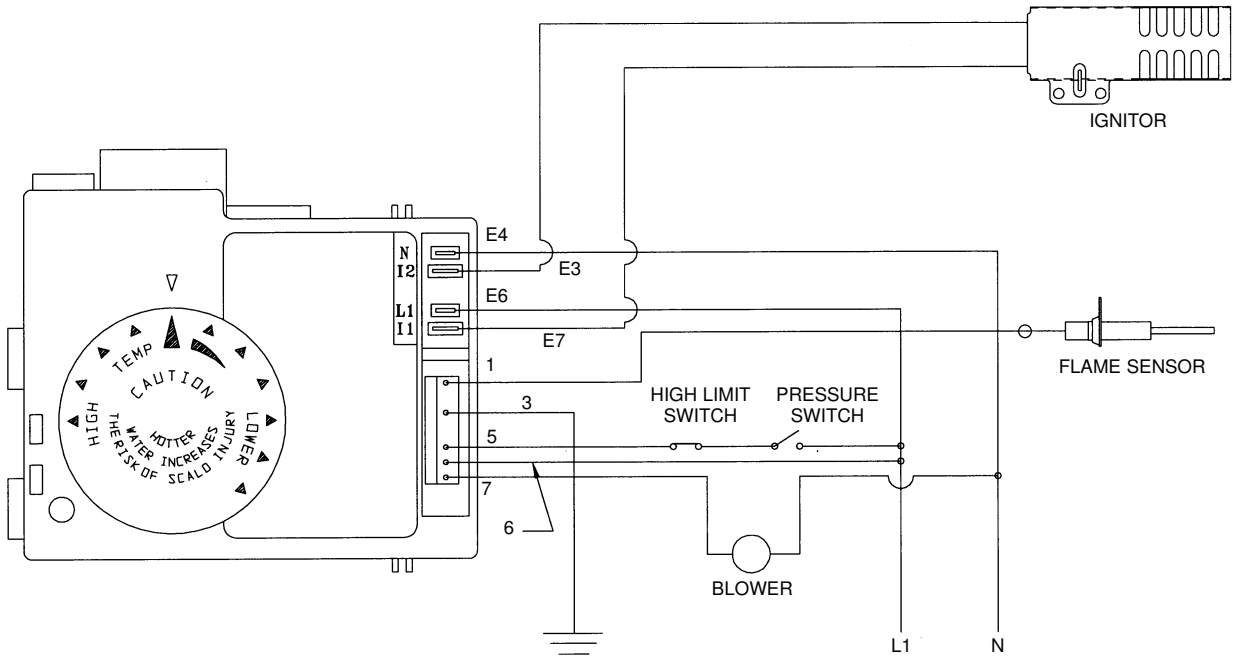


Figure 9

⚠ CAUTION

IF YOUR WATER HEATER IS EQUIPPED WITH A CAST IRON BURNER, PERFORM THE FOLLOWING INSPECTION BEFORE STARTING THE WATER HEATER.

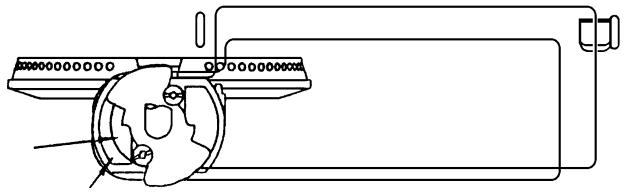


Figure 10

1. Remove outer door from casing.
2. Check for insulation blockage (See arrows)
3. If insulation is blocking primary air, remove, so that no insulation is in the area.

NO INSULATION SHOULD BLOCK PRIMARY AIR OPENING

4. Check for fully open air shutter, as shown, ensure no insulation has become lodged in burner venturi.
5. Refer to installation manual " Burner Maintenance" for cast iron burners, for further information.

Installation Check List

	Check Here
1. Has the gas piping been leak tested?	☐
2. Is the heater connected to the correct gas supply as shown on the rating plate (Natural Gas / Propane)?	☐
3. Is the clearance between the heater and combustible construction as per specifications?	☐
4. Does the area around the heater have adequate ventilation?	☐
5. Does the gas piping conform with the recommendations of your Gas Utility Company?	☐
6. Is the water piping correctly connected and are there no leaks?	☐
7. Is the water heater filled with water?	☐
8. Is the water supply valve open?	☐
9. Is the vent pipe installed properly and are horizontal runs properly supported?	☐
10. Is the draft hood air intake opening unobstructed?	☐
11. Is the T&P valve installed, and the drain pipe from the T&P valve unobstructed?	☐
12. Is a drain pan installed (if required) with a proper overflow pipe, directed to a drain?	☐
13. Have you taken steps to prevent water damage in case of leaks?	☐
14. Is the electric supply a 120V, electrically grounded, 15A circuit?	☐

If the answer to all of the questions above is "yes", proceed with lighting the heater.

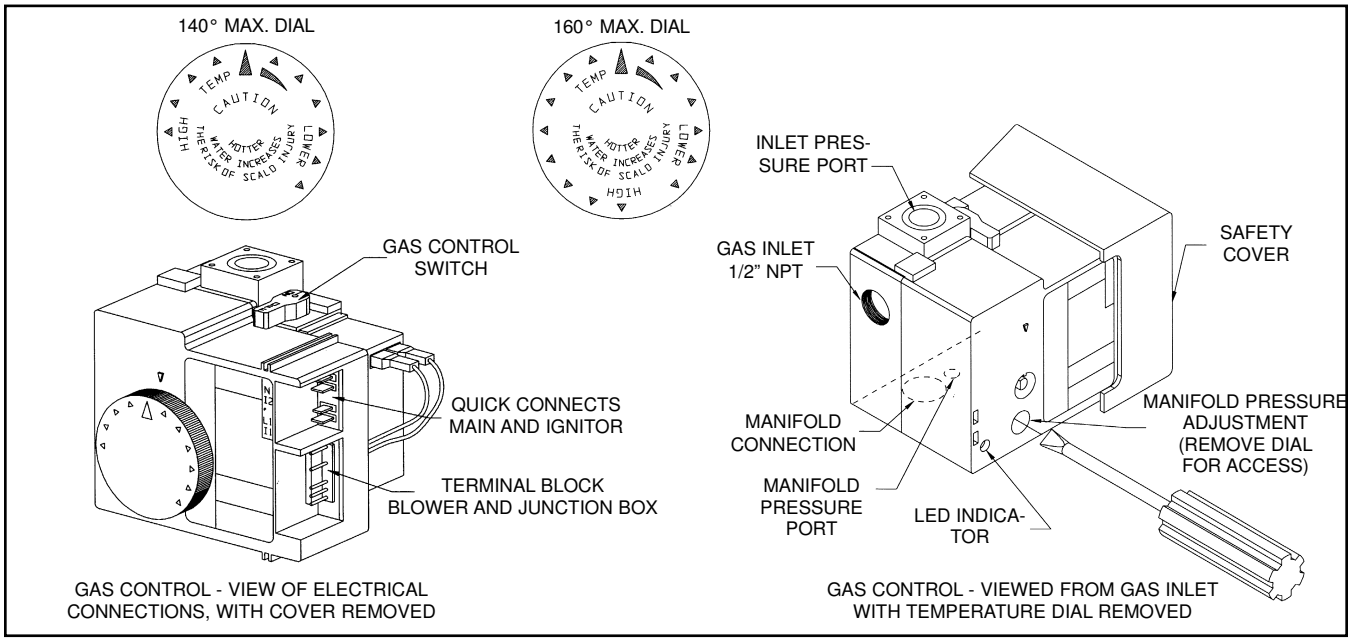

140° MAX. DIAL
160° MAX. DIAL
TEMP
CAUTION
HOTTER WATER INCREASES THE RISK OF SCALD INJURY
HIGH
LOWER
GAS CONTROL SWITCH
QUICK CONNECTS MAIN AND IGNITOR
TERMINAL BLOCK BLOWER AND JUNCTION BOX
GAS CONTROL - VIEW OF ELECTRICAL CONNECTIONS, WITH COVER REMOVED
INLET PRESSURE PORT
GAS INLET 1/2" NPT
SAFETY COVER
MANIFOLD CONNECTION
MANIFOLD PRESSURE PORT
LED INDICATOR
MANIFOLD PRESSURE ADJUSTMENT (REMOVE DIAL FOR ACCESS)
GAS CONTROL - VIEWED FROM GAS INLET WITH TEMPERATURE DIAL REMOVED

Figure 11

VI) FIRST LIGHTING

⚠ CAUTION

Read before proceeding. If you do not follow these instructions exactly, a fire or explosion may result, causing property damage, personal injury or loss of life.

This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light manually with a match.

The temperature dial is adjusted to its lowest temperature position when shipped from factory.

Gas Control

This heater is equipped with a combination gas control/ignitor. It will perform these functions:

1. Upon call for hot water, the gas control will energize the ignitor which lights the main burner.
2. When the main burner is lit, the gas control will monitor electronically the presence of a flame.
3. When the water temperature has been reached, the gas control will turn off gas supply to the burner.
4. If a flame cannot be established within the trial for ignition period, the control will stop the flow of gas. The control will continue to energize the blower (interpurge) and attempt ignition again. If a flame cannot be established after three attempts, the control will lock-out. A red LED light on the control will flash continually indicating a lock-out condition occured. Unplugging the 120VAC power supply to the water heater then restoring power will reset the control.

NOTE: The control will perform a self-diagnostic check upon start-up and the LED will flash 3-4 times. During normal operation the LED remains off. A solid red LED indicates that the control must be replaced.

What to Do If You Smell Gas

- Turn the gas shut-off valve in the gas supply line to the heater to 'OFF'.
- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

If you do not smell gas, with the control switch at "ON" position, you may proceed.

1. Turn the thermostat to the lowest setting and the gas control switch to the "OFF" position.

2. Ensure the power cord is plugged in and correct voltage is supplied to the appliance.

3. With the gas control switch "OFF", check the supply gas pressure to the control:
   Natural Gas at 7" W.C. pressure
   Propane Gas at 11" W.C. pressure

4. Turn the gas control switch to fully "ON".

5. Turn the thermostat to the desired setting, i.e. from "Lower" toward "HIGH". This will start the lighting process:
   a. The blower will be turned on after 20 seconds.
   b. The ignitor will be at full glow after the next 17 seconds.
   c. The main gas valve opens.
   d. The main burner lights up, the flame envelops the flame sensor, and the burner flame verification process begins.

6. While the main burner is on, ensure the flame envelopes $^{5}/_{8}$" to $^{3}/_{4}$" of the flame sensor.

7. While the main burner is on, again check all gas connections with a soapy water solution. Correct any poor connections that may be detected by the presence of soap bubbles. **Shut off electric and gas supply before making such corrections.**

Important

When using soapy water solution or liquid leak test solution around the control, do not splash any liquid on the electric connections or electronic components of the control. The control can be damaged. **DO NOT** use a flame to detect gas leaks.

8. Turn the thermostat to the lowest setting. Main burner will stop in approximately 20 seconds.

   NOTE:
   If the burner does not stop as described above, the water temperature may be below the lowest temperature that the thermostat is able to sense. (90°F = 32°C). Wait until the water temperature has risen.

9. Re-cycle the system by turning the temperature dial up toward the "HIGH" position to call for heat a second time.

10. To check the lock–out on the ignition control, turn the temperature dial to the lowest setting possible. Wait for the heater to shut down completely. Then, turn the gas control switch to "OFF" position.

11. Now turn the temperature dial to the maximum setting.

12. The ignitor will be energized. However, since there is no main gas flow, the burner cannot be lit. After three trials, a lock–out will occur, deactivating the system.

Re–settable Lock Out:
This condition is indicated by a flashing LED.

13. To reactivate the system, turn the power off by unplugging the power cord. Turn the gas control switch to “ON”. Then, restore power plugging in the power cord. The flashing LED will go off, indicating that the lock–out has been reset.
14. After completing the First Lighting and Check Out Procedure, turn the temperature dial to desired temperature setting. Instruct the homeowner in the use and setting of the control.
15. **If the LED is on continuously**, this indicates an unserviceable fault in the gas control and it cannot be reset. The complete gas control must be replaced.

Temperature Regulation

The temperature dial is adjusted to its lowest temperature position when shipped from factory.
The temperature of the water can be selected by setting of the temperature dial on the front of the gas control (see Figure 11). The large arrow ▲ position on the thermostat is the preferred starting point for setting the temperature control. Each division on the thermostat dial representes a 5°F (3°C) water temperature change. Energy conservation is a consideration when selecting the water temperature setting.
For most economical operation, select a water temperature that is adequate for your needs. There is a hot water scald potential if the thermostat is set too high.

⚠ DANGER

RISK OF SCALDING
Hot water will cause third degree burns
in 6 seconds at 140°F (60°C)
in 30 seconds at 130°F (54°C)
in 5 minutes at 120°F (49°C)

In households with children, disabled or the elderly, select a lower temperature setting. Valves for reducing point–of–use temperature by mixing hot and cold water are available. Consult a licensed plumber or the local plumbing authority.

Should overheating occur or the gas supply fail to shut off, turn off the manual gas valve to the appliance.

To Turn Off Gas to the Appliance

1. Turn the temperature dial to the lowest setting.
2. Turn the gas control switch to “Off”
3. Turn the manual gas valve in the gas supply line to the heater to “OFF”
4. If the blower is still running, wait until it stops.
5. Unplug the electrical cord.

VII) SERVICE AND MAINTENANCE

General

Flooding and Fire
Should the water heater be subjected to flooding, fire, or any unusual condition, shut off manual gas valve at the inlet and pull the plug from the electrical receptacle. Do not put the heater into operation until it has been thoroughly checked by a qualified technician.

Service and maintenance of the heater should be performed at regular intervals. The following is a service recommendation for the homeowner.

At all times

- Keep flammable liquids, such as gasoline, paint thinners, and glue away from the vicinity of the heater.
- Keep area around heater clean.
- Ensure that there is nothing obstructing the flow of combustion and ventilation air.

⚠ CAUTION:

UNPLUG THE WATER HEATER BEFORE PERFORMING THE FOLLOWING MAINTENANCE. WHEN FINISHED, REINSERT THE PLUG INTO THE ELECTRICAL SOCKET. THE WATER HEATER WILL START UP AGAIN AUTOMATICALLY.

General Upkeep
Make it a habit to look around the heater, the vent piping, and the hot and cold water pipes. Do not allow any material to be piled up against the heater. Do not place any object on top of the vent pipes.

Every 3 – 6 months or as necessary:

- Clean lint from blower, top of heater. (procedure below)
- Flush a pail of water from the heater drain valve. (procedure below)

Once per year:

- Inspect the Vent System (procedure below)
- Check Burner flame for normal blue flame pattern (see section II)
- Cleaning of Combustion Chamber (scaling). (procedure below)
- Check T&P Valve Operation (procedure below)

If any deficiencies or abnormalities are encountered during these inspections call a qualified service technician.

Blower Maintenance:

As described above, inspect the top of the heater and around the ventilation openings of the blower motor for any lint and dust that may have accumulated.
Depending on the location of the heater, significant quantities of lint may accumulate. The lint may obstruct the free flow of air to the motor, and cause the motor run hotter than normal. To clean any dust and lint, proceed as follows:

1. Unplug the water heater.
2. Using a nylon bristled paint or tooth brush, brush away any lint. Pick up the lint with a cloth.

Better results can be achieved by using the small brush on a vacuum cleaner to remove all lint and dust which have accumulated on top of the heater, the drafthood, the air intake openings of the drafthood, and motor ventilation openings.

Do not insert any foreign object into the ventilation openings of the motor.
Impeller/Fin Cleaning:

1. Remove drafthood from unit by loosening 3 screws to the blower housing, and 2 screws to top of water heater. Set aside.
2. Using a nylon bristled paint or tooth brush and vacuum cleaner, brush the dust/dirt from each impeller blade while holding the vacuum close enough to collect the displaced dust/dirt.
3. Replace drafthood using the same 5 screws from step #1.

⚠ CAUTION:

Do not dislodge the small tubing at the fan housing pressure tap or any wiring that goes to the limit switches on the fan housing!

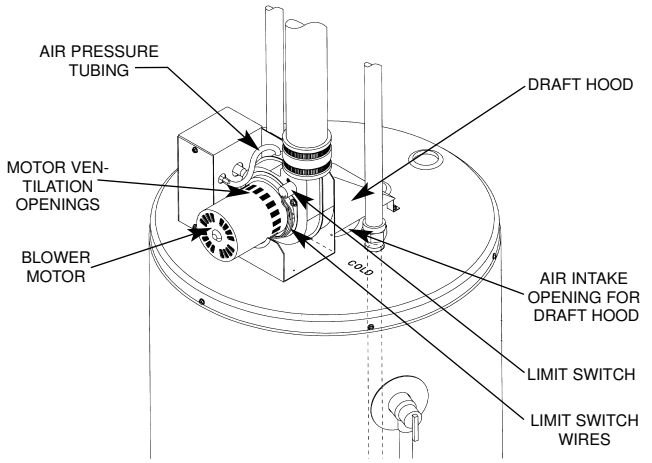


Figure 12

Flushing of Tank

Once per month, drain approximately a full pail of water from the drain valve (Item 25 in Figure 1).

⚠ CAUTION:

The out–flowing water is hot. Avoid splashing the water on yourself or on the surroundings where it may cause damage.

1. Close the valve in the cold water line to the heater.
2. Open an upstairs hot water tap.
3. Place a pail under the water heater drain valve and open slowly.
4. Drain approximately one pail full. Check for any sediment that may have been flushed out.

If the water is discoloured, or if particles like coarse sand are flushed out, this may be an indication that further service is required. It is normal that small quantities of particles are flushed out. However, if large quantities are flushed out, sometimes to the extent that the water flow almost stops, call a water specialist for recommendation. The anode may have to be replaced or a water softener may be required to remove calcium from the water supply.

5. After flushing, close the water heater drain valve. Ensure that the drain valve does not drip.
6. Open the cold water supply valve to the heater.
7. Check the hot water faucet which was open at the beginning. When a steady stream of water flows out with no air escaping, close faucet.

Venting System Inspection

Inspect the venting system over the entire length of the system, beginning at the heater.

1. Check the rubber coupling which attaches the vent pipe to the blower. Are the screw clamps tight? Does the rubber coupling show signs of deterioration?
2. Feel along the length of the vent pipe to ensure that all joints to fittings and couplings are secure.
3. Inspect all hangers. Are the fasteners firm? Has any foam rubber or vibration isolation material become loose?

⚠ WARNING

Do not allow any material to be placed on top of or suspended from the vent pipes. Do not use vent pipes to dry towels, clothes, or use the vent pipes as anchors for clotheslines or other similar objects.

4. Inspect seals / caulking where the vent piping penetrates an exterior wall.
5. Inspect the outside vent elbow or the vent riser (if installed). Remove any obstructions.
6. Have any partitions, false ceilings or other structural changes been made which may have an impact on the functioning of the vent system?
7. Inspect the ventilation openings of the blower fan. Remove any lint that may impair air circulation at the motor.
8. Inspect the ventilation openings that provide combustion / ventilation / dilution air to the heater.

   (See Section II VENTING)

If any deficiencies are encountered contact a qualified service contractor.

Burner Inspection

There are two kinds of burners:
1. A sheet metal burner is used on most natural gas models. See Figure 13.
2. A cast iron burner is used on all propane gas models and some natural gas models. See Figure 15.

Sheet Metal Burner

The steel burner for Natural Gas has no external air adjustment. It is fully self– compensating and no outside adjustment is required. Observe the flame pattern. Ensure that no debris has fallen on top of the burner and no foreign objects have been introduced into the combustion chamber. Ensure that the combustion air openings to the heater are not obstructed and the inner and outer door to the combustion chamber are in place.

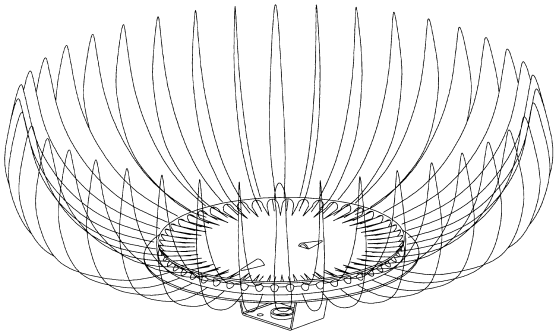


Figure 13

Cast Iron Burner

1. Observe the flame pattern on the burner.
2. Observe the primary air openings of the burner. (See Figure 14) If lint and dust have accumulated, clean it up with a soft brush.

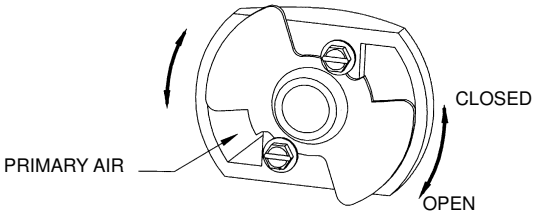


Figure 14

3. If the flame pattern is not a soft, blue flame the primary air may need adjustment:
   a. Loosen the air shutter screws and open the air shutter, to admit more primary air. If the flame becomes hard and tends to lift away from the burner ports, close the air shutter a little. Do this adjustment a little at a time.
   b. When you have adjusted the primary air correctly, there should not be any tendency of the flame to lift, nor should the flame be yellow and luminous. Slight yellow tips of the flame are normal. Tighten the air shutter adjustment screws.

GOOD BLUE FLAMES

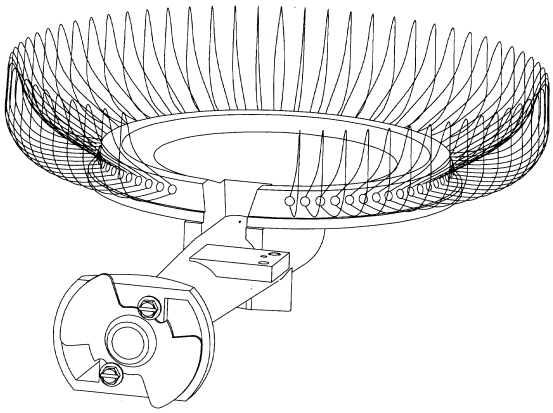


Figure 15

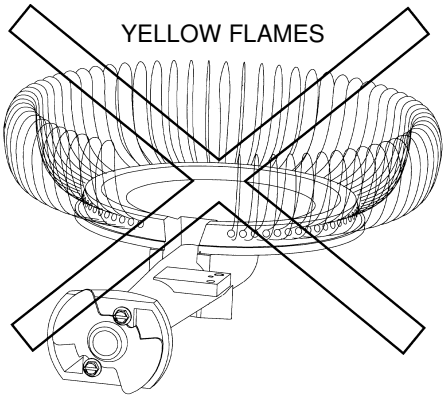


Figure 15 (continued)

Combustion Chamber Cleaning:

THIS WILL REQUIRE SUFFICIENT TIME FOR THE WATER HEATER TO COOL DOWN. UNPLUG THE POWER CORD AND WAIT 1 HOUR MINIMUM. WEAR PROTECTIVE CLOTHING (LONG SLEEVES AND GLOVES) AS METAL COMPONENTS MAY STILL BE HOT ENOUGH TO BURN EXPOSED SKIN.

1. Remove outer door.
2. Slide inner door open.
3. Use vacuum to clean top burner and radiation shield.

Temperature and Pressure Relief Valve

Check the temperature and pressure relief valve (T&P valve) to ensure that it functions properly and there is no blockage.

Lift the operating lever to release water and let it snap shut. The water should stop instantly upon release of the lever.

If the temperature and pressure relief valve on the water heater discharges periodically, this may be due to thermal expansion in a closed water supply system. Contact the water supplier or local plumbing inspector on how to correct this situation.

⚠ CAUTION:

The escaping water will be hot. Stand clear. Make sure the out–flowing water will not cause injury or damage near the heater.

Anode and Cathodic Protection

In order to protect the tank, a magnesium anode has been installed in the tank. Depending on local water conditions, this anode may have to be replaced from time to time. It is not possible to make any predictions for the expected life of the anode. Anodes have been known to last for 20 or more years, but sometimes have had to be replaced in as few as 2 years.

In protecting the tank interior from rusting, the anode will be consumed through an electrolytic action.

On a new installation, it is recommended that the anode be inspected annually to establish a pattern of consumption. Further inspections can be made accordingly.

Once an anode has been consumed such that 4” or more of the steel core wire is exposed, the anode must be replaced.

To replace an anode:

1. Turn off gas/ power. (Follow “To Turn Off Gas to Appliance” section)
2. Shut off the cold water supply valve to the heater.
3. Open an upstairs hot water faucet.
4. Drain approximately one full pail of water from the water heater drain valve.
5. Remove the plastic cover (Item 15 in figure 1) from the water heater top pan.
6. With a 1 1/16” hex socket wrench and a long handle extension, unscrew the anode. NOTE: A power driven impact wrench would make the job very easy. It may be necessary for a second person to restrain the heater to keep it from turning.
7. Pull out and inspect the anode. If necessary, replace it with a new one.
8. When reinserting the anode, put a good grade sealing compound on the thread of the anode.
9. Tighten the anode to the fitting of the tank.
10. Open the cold water supply valve to the heater. Fill up the tank. Close the upstairs hot water faucet. Check for leaks. Repair if necessary. If no leaks are found, replace the plastic cover over the anode access opening.

Odour, Discolouration of Water, Gas Escaping from Hot Water Faucet

The following situations may arise depending on the conditions of the water in your area:

Odour

Certain regions, particularly rural areas may have water that contains sulphur in low concentrations. Hydrogen sulphide gas may be produced as a reaction between the anode and the water. This is recognized by the “Rotten Egg” smell.

As a remedy, a different anode is available from the manufacturer to replace the original magnesium anode. Under no circumstances should the anode be permanently removed from a tank without being replaced.

⚠ CAUTION

The warranty is void if a water heater is operated without an anode.

Discolouration

It is also possible that “black” or discolored water may come out of a hot water faucet. If reddish particles seem to be present, it may be iron oxide which precipitates out of the water. It is usually present in the cold water supply. Heating the water will worsen the condition.

In this case, an iron filter in the water supply of the house will remedy this condition.

If any of such conditions are encountered, consult a water specialist, who is familiar with the water conditions in your area, for recommendation.

Gas Escaping

Hydrogen gas can be produced in a hot water system that has been standing idle for a long period of time (generally two weeks or more). **Hydrogen gas is extremely flammable.** To prevent the possibility of injury under these conditions, we recommend the hot water faucet to be open for several minutes at the kitchen sink before you use any electrical appliance that is connected to the hot water system. If hydrogen gas is present, there will probably be an unusual sound such as air escaping through the pipe as the hot water begins to flow. Do not smoke or have open flame near the faucet at the time it is open.

If the problem is excessive, the anode should be replaced with a special low potential anode which is available from the manufacturer.

Gas Control

The gas control should not require any service except for a check of the safety function.

Proceed as follows:

1. Turn the temperature dial down to the lowest setting. Wait for the system to shut down completely.
2. Turn the gas control switch to “OFF”.
3. Turn the temperature dial up to the maximum setting.
4. Observe the ignitor. It should turn red hot and try to light the main burner. After three trials for ignition, the control will shut down and the LED indicator light will start flashing. This indicates a lock–out and the control must be re–set.

To re–set the control

1. Turn off the electric power by pulling the plug of the heater.
2. Turn the gas control switch to “ON”. Then, reinsert the plug into the electrical socket.
3. Turn the temperature dial to the highest temperature. The control should energize the ignitor and the burner should light.
4. Turn the temperature dial down to the previous desired temperature.

Condensation

This heater has been designed for maximum efficiency and operates at very low flue (exhaust) temperature. As a result, when the supply water temperature is very low, the water vapor contained in the flue gases will condense and drip down the flue tube onto the burner. Excess condensation may collect in the bottom of the heater. As the tank temperature increases, this water will eventually evaporate and be carried out with the flue gas. The bottom of the heater has been designed to collect some of this condensation, but in extreme cases it may overflow. Do not confuse this with a leaking tank. Condensation overflow is occasional. This is one of the reasons why a heater should not be installed in a location where water may damage flooring, carpeting or the contents of a home. Installing a drain pan is always a good precaution.

⚠ WARNING

Keep the area around the heater clear and unobstructed.

⚠ CAUTION

Keep safety your first priority. Take all precautions to avoid creating a fire, health or safety hazard.

Although this heater has been specifically approved for certain clearances to combustible materials, any objects placed in that space will reduce air circulation and increase the risk of fire.

VIII) COMBINATION POTABLE WATER HEATING AND SPACE HEATING (COMBO)

This section serves as a guide for the installation and use of "Combo" heating systems utilizing a domestic water heater which has been specifically approved for such use. It is written for those knowledgeable in the required trades and professionals involved in the design and installation of Combo Heating Systems.

It is the responsibility of the installer/ designer to follow all applicable codes to ensure the effectiveness and safety of the installation.

⚠ Caution

READ BEFORE PROCEEDING

The following requirements must be met for the installation of Combo Heating Systems:

1.All components used for the distribution of water in the heating loop must be suitable for potable water. These include all piping, fittings, solder and fluxes, pumps for circulation of water, valves, etc.

2.The water heater **must not** be connected to a hydronic heating system that has been used previously.

3.No boiler treatment chemicals of any kind shall be introduced into the system.

4.The Combo System components must be selected and sized to meet and maintain the total calculated demands for both domestic service hot water and space heating requirement. The sizing and installation must be performed in accordance with good engineering practice such as ASHRAE Handbooks, HRAI, Hydronics Institute Manuals, CGA B149, NFPA 54, ANSI Z223.1, CSA F280, National/Provincial Building Codes, CSA C22.1, ANSI/NFPA 70, CSA B51 and/or codes having jurisdiction.

5.The air handler (fan coil) and/or the circulating pump in a baseboard hydronic loop will require a dedicated 120V circuit. This must be provided and identified for this purpose.

6.All piping between the water heater and the air handler or hydronic baseboard loop must be adequately insulated to reduce heat loss.

7.If the local jurisdiction requires a back-flow preventer in the cold water line, an expansion tank of adequate size must be installed.

8.To reduce the scald hazard potential, a mixing valve must be installed.

INSTALLATION

The heating mode may be one of the following options:

A- A fan coil/air handler (figure 16).

B- A hydronic baseboard (finned tube) loop/ In floor heating (figure 17).

The following is a list of requirements for the installation of the heating loop to the water heater.

a)Install shut-off valves and unions so that the water heater can be isolated from the heating module should servicing of the water heater become necessary.

b)Install a drain valve at the lowest point of the heating loop so that water can be drained from the heating module without affecting the water heater.

c)If the air handler does not have a venting means at the highest point of the piping arrangement, install an air bleed at the highest point of the plumbing arrangement.

MAINTENANCE

The installation and maintenance of the water heater must follow all of the instructions described in sections I to VII of this manual. Heater failure that is a result of the heating system is not covered by warranty.

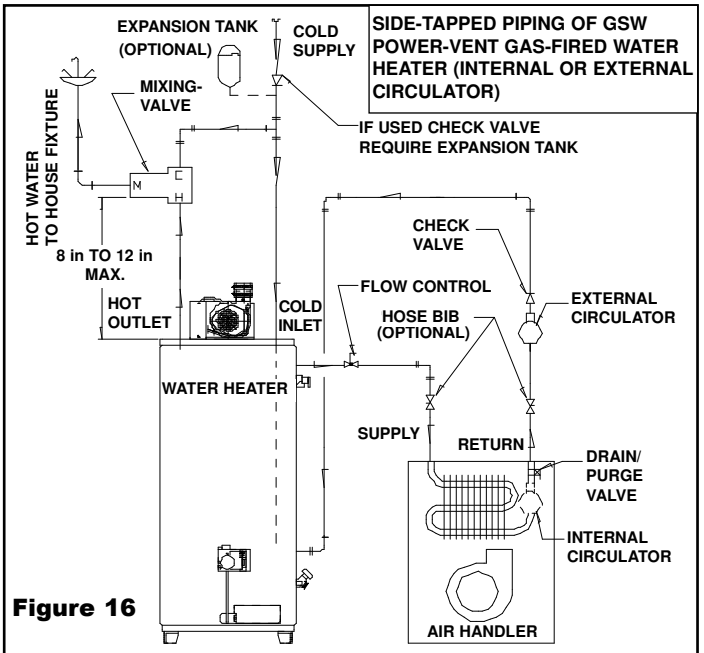


Figure 16

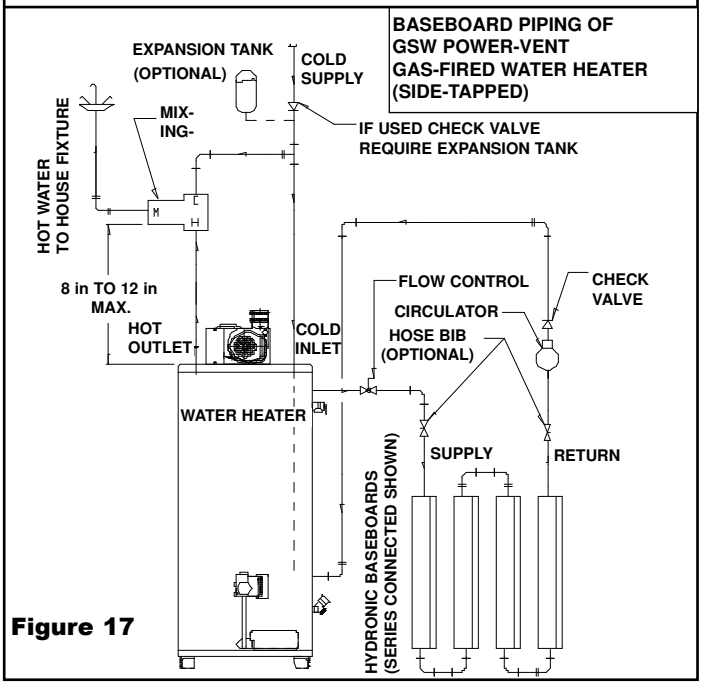


Figure 17

ROBERTSHAW 7222WDER SEQUENCE OF OPERATION

When initially energized, the 7222WDER control will perform a self-diagnostic check and the red LED will momentarily flash 3-4 times. On a call for heat, a check is made by the control to ensure that the air pressure switch on the blower is in the open position (if closed the sequence pauses and the blower is not energized). With the air pressure switch proven open, the control energizes the blower (Terminal 7). With the blower energized the control checks to ensure that the air pressure switch closes. At this point the air pressure switch must close or the blower will run continuously. As the high limit switch on the blower is wired in series with the air pressure switch, both switches must be closed (energizing Terminal 5) or the blower will run continuously. With proven airflow and the high limit switch closed, a flame safety check is undertaken to ensure that a flame is not present prior to ignition. Providing a flame signal is not detected, the hot surface igniter is energized and a warm up period of approximately 17 seconds is initiated. Following the igniter warm up period, the control allows gas flow to the burner initiating a 4-second trial for ignition period. The control will normally establish a flame and maintain the flame until the call for heat is satisfied. If a flame cannot be established, is extinguished, or the flame signal drops below 0.7 microamps, the control will stop the flow of gas to the burner. The blower continues to be energized and a 30-second interpurge is undertaken. The control will attempt for ignition again. If the control cannot establish ignition after three attempts, it will lock-out. The red LED will flash continuously indicating a lock-out condition occurred. Unplugging the 120VAC-power supply to the water heater then restoring power will reset the control.

ROBERTSHAW 7222WDER TROUBLE SHOOTING GUIDE

Symptom	Possible Cause(s)	Corrective Action
Blower will not start	1. No Power to unit 2. Thermostat setting too low 3. Defective air pressure switch (must be open at start-up before blower is energized) 4. Defective blower 5. Disconnected or loose wire 6. Control locked-out	1. Plug in power cord, check fuses/supply voltage 2. Increase thermostat temperature setting 3. Replace air pressure switch 4. Replace blower 5. Repair/reconnect wires 6. Reset – determine cause of lock-out
Blower runs continuously	1. Air pressure switch not closing due to insufficient draft - check for: a) vent piping blocked b) piping length too long c) frozen vent termination d) clogged/dirty blower 2. Disconnected, torn or blocked pressure sensing tubing from air pressure switch to blower housing 3. Air pressure switch not closing due to defective switch 4. High limit switch open due to excessive vent temperature or defective switch.	1. Determine cause of insufficient draft. Check draft with manometer at pressure switch (refer to Table VI for minimum acceptable draft settings) a) remove blockage b) reduce vent length/increase vent size c) clear termination of snow/ice d) clean blower wheel 2. Reconnect or replace pressure sensing tubing 3. Replace defective pressure switch 4. Determine cause of overheating check for: overfiring, insufficient air supply, high ambient air temperature (once activated high limit must be replaced)
Hot surface igniter not glowing following warm-up period	1. 120VAC polarity reversed at 120VAC outlet receptacle 2. Defective hot surface igniter 3. Defective Control	1. Reverse polarity at 120VAC outlet receptacle 2. Replace igniter (Check for 120 VAC supply to igniter across I1 & I2) 3. Replace control
Control locked-out *Continuously flashing red LED (Resettable lock-out condition)	1. No gas supply 2. Gas control in off position 3. Insufficient gas supply 4. Incorrect manifold gas pressure 5. Incorrect gas type 6. Defective igniter/loose or disconnected wire 7. Improperly positioned, dirty, or defective flame rod/loose or disconnected wire 8. Main burner orifice clogged 9. Blocked water heater flue 10. Defective control	1. Check /turn on gas supply 2. Turn control to On position 3. Ensure correct supply pressure for gas type (Nat Gas 7.0” w.c.) (Propane 11.0” w.c) 4. Check/adjust for correct manifold gas pressure (Nat Gas 3.5” w.c.) (Propane 10.0” w.c) 5. Ensure correct gas type for water heater model 6. Replace defective igniter/reconnect wiring 7. Reposition, clean, or replace defective flame rod/reconnect wiring 8. Remove obstruction 9 Remove blockage/clean flue 10. Replace Control
Control locked-out *Solid red LED	1. Internal control fault 2. ECO failure – excessive water temperature 3. Excessive humidity/damp environment	1. Replace control 2. Replace control 3. Allow control to dry

~ *Certificate of Warranty* ~

See Rating Label Serial Number prefix for Warranty Code. Reduced warranty period applies to Newfoundland.

Warranty Code:	P	R	S	T	U	V	W	Y
Standard Warranty Years:	3	5	6	7	8	9	10	12
Reduced Warranty Years:	2	3	3	5	5	5	5	7

For its GSW and John Wood water heaters and storage boosters ("Unit"), GSW Water Heating ("GSW") warrants that, upon receipt of a properly verified Warranty claim within the Warranty Period, it will, at its election, repair or replace: units which leak or parts which are defective in material or workmanship, subject to the terms and conditions set forth in this certificate. GSW will not assume any expense or liability for unauthorized returns, nor repairs made by a person who has not been authorized by GSW or one of its authorized dealers. GSW Units/parts must be replaced with GSW or John Wood products to be eligible for Warranty. This Warranty is available to the original owner of a Unit installed within the boundaries of continental United States, of Canada, or their territories. **Consumers must retain point-of-sale proof of purchase to validate warranty entitlement.** This Warranty does not cover components not manufactured by GSW, such as oil burners, which carry the warranty given by the manufacturer thereof, copy of which warranty GSW will make available, to the extent supplied by the manufacturer, without recourse to GSW.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THIS EXPRESS WARRANTY IS, WHERE PERMITTED BY LAW, IN LIEU OF AND EXCLUDES AND REPLACES ALL OTHER CONDITIONS, WARRANTIES, GUARANTEES, REPRESENTATIONS, OBLIGATIONS OR LIABILITIES OF GSW OF ANY NATURE OR KIND, EXPRESS OR IMPLIED, HOWEVER ARISING (WHETHER BY CONTRACT, CONDUCT, STATEMENT, STATUTE, NEGLIGENCE, PRINCIPLES OF MANUFACTURER'S LIABILITY, OPERATION OF LAW OR OTHERWISE) WITH RESPECT TO THE UNIT OR ITS FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, INSTALLATION, OPERATION, REPAIR OR REPLACEMENT. GSW EXPRESSLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES. IN NO EVENT WILL GSW'S LIABILITIES EXCEED THE COST OF THE DEFECTIVE PART(S) OR UNIT. GSW WILL NOT PAY FOR ANY TRANSPORTATION, LABOUR, INSTALLATION, OR OTHER INCIDENTAL COSTS ASSOCIATED WITH THE REPAIR OR REPLACEMENT OF A DEFECTIVE PART OR UNIT.

This warranty and GSW's obligations shall be construed and determined in accordance with the laws of both the Province of Ontario, and of Canada in force therein. This Warranty does not affect specific legal rights of a consumer under applicable law, except to the extent that such rights may be waived or replaced, and the provisions hereof are deemed to be amended to the extent necessary. The unenforceability of any provision, in whole or in part, of this Certificate shall not affect the remaining provisions. Any and all repair and/or replacement of part(s) or Unit are the sole and exclusive remedy available against GSW.

LIABILITY OF GSW COVERED BY THIS WARRANTY IS CONDITIONAL UPON THE FOLLOWING:

1. The Unit shall be installed in accordance with all manufacturers' instructions, all applicable equipment and building codes, ordinances and regulations (hereinafter referred to as the "standards").
2. The Unit must not be installed where water damage can result from a leak, while provision(s) shall be made for directing any water escaping from the Unit, to a properly operating drainpipe. As all units of this type may eventually leak, you must protect against any potential water damage. GSW accepts no responsibility for such damage, nor any incidental or consequential loss, nor damage(s) related thereto, suffered by the owner of the Unit nor by any third party.
3. The Unit shall not be installed where it will be exposed to adverse or unusual environmental or corrosive conditions. No warranty extends, for example, and without limitation of the foregoing, to Units exposed to: salts; chemicals; exhausts; pollutants or contaminants. Further, no warranty extends to Units affected by fire, freezing or flood, "Acts of God", or any other contingency beyond the control of GSW.
4. The Unit shall be equipped with a properly operating temperature and pressure relief valve as specified by GSW and applicable standards. The Unit shall be operated at temperatures not exceeding the maximum setting of the thermostat and/or high limit control provided by GSW, and at water pressures not exceeding the pressure reading stated on the Unit.
5. The Unit must be carefully inspected, maintained, and operated in accordance with the manufacturer's instructions. No warranty extends, for example, and without limitation of the foregoing, to any Unit operated: without the tank being completely filled with water; without an operating anode; with levels of sediment or lime precipitate which cause failure; in connection to any attachment(s), energy saving device(s), or other means of heating, except as approved by GSW for the Unit; other than with potable water without any additives such as salts, chlorine or chemicals, except those added for the sole purpose of rendering the water fit for domestic use.
6. All repairs must be made by a competent and qualified person who is certified, by GSW or one of its authorized dealers, to work on the Unit, using factory approved replacement parts, and the Unit shall not be otherwise modified, altered or improperly repaired.
7. A properly documented claim shall be received by GSW or one of its authorized dealers, or point of purchase, within the following Warranty Period, except as provided otherwise below*:
   a) for any defective part, within one (1) year; or
   b) for any Unit that develops leaks in the inner tank due to rust, corrosion or other chemical reactions caused by the potable domestic water supplied to your home, within the period of time shown in table at the top of this page.
   * Residential units installed and used in a commercial application carry a warranty period of one (1) year from date of installation; and,
   Any repair or replacement of any part, tank, or Unit under this Warranty will not extend the Warranty Period beyond that calculated from the date of first installation of the original Unit. The date of first installation will be deemed to be the later of the date indicated by the Unit's serial number, or if supplied with the Warranty claim, the sales receipt, or installer's receipt.
8. A claim under this Warranty must include the model and serial number of the Unit, proof of date on which the Unit was first installed, and the identity of the defective part(s) for which a claim is being made and be submitted within 15 days following discovery of the defect(s), by personal delivery to a GSW authorized dealer, point of purchase, or GSW itself at:
   GSW Water Heating
   GSW Water Heating is a division of GSW Water Products Inc.
   599 Hill Street West
   Fergus, ON Canada N1M 2X1
   Should you have questions, please call our Technical Support Line at **1-888-479-8324.**
9. If requested by GSW, information relating to the purchase, transportation, operation and installation of the Unit must be supplied. The defective part(s) or Unit, with all components properly and securely packed, shall be returned transportation pre-paid, to the address designated by GSW in the written request. All claims are subject to validation by GSW.